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ON ARENICOLA CRISTATA AND ITS ALLIES.

BY J. E. IVES.

During the month of July of last year, my friend Mr. Uselma C. Smith collected some specimens of a polychaetous worm, belonging to the genus *Arenicola* at Anglesea, about ten miles N. E. of Cape May, on the New Jersey Coast. The first specimens seen by him lay upon the beach, apparently dead, having perchance left their burrows in the endeavor to reach the water. Upon further examination he discovered a large colony concealed in the sand, along the edge of a pool of water formed by the washing over of the sea. Four of these specimens were obtained and subsequently handed over to me in alcohol for identification.

They correspond closely to *Arenicola cristata* described by Stimpson¹ in 1856 from Charleston, South Carolina, and which, with a doubtful exception,² has not since been reported from the United States. In his recent paper "On *Arenicola* specimens from the Gulf of Naples," Dr. R. Horst³ has given a detailed account of this species from specimens obtained in the Mediterranean. The forms from Anglesea answer both in general and microscopical characters to Dr. Horst's description, the only difference being that they possess on the ventral surface of the caudal segments small papillæ, which will be referred to again later. Dr. Horst has suggested the identity of this species with *Arenicola antillensis* described by Lütken⁴ from the West Indies, and upon examination I find that the New Jersey specimens correspond as closely as possible to Lütken's description. As already stated, there are on the ventral surface of the caudal segments small papillæ, and these doubtless represent those observed by Dr. Lütken in *Arenicola antillensis*. These papillæ, however, Dr. Horst did not find in the Mediterranean specimens, but their presence or absence should not, in my opinion, be considered a specific character. The length of the longest specimen is about 250 mm.

¹ Proc. Bost. Soc. Nat. Hist., Vol. 5, p. 114.

² Webster, "Annelida Chætopoda of New Jersey," 32d Ann. Rep. New York State Mus., 1879, p. 117.

³ Notes from the Leyden Museum, Vol. xi, p. 43.

⁴ Vidensk. Meddel. fra Naturk. Forening i Kjöbenhavn, 1864, p. 120.

In the collection of the Academy are six specimens from the Manatee River on the West Coast of Florida, which, although presenting some slight differences, I regard as a variety of *Arenicola cristata*. They have no papillæ on the ventral surface of the caudal segments; the distal ends of the ventral bristles are not serrated and the secondary branchiæ have fewer tufts and are less regularly arranged. The specimens are small, the longest about 140 mm. in length, and may be immature. Ehlers¹ in his work on Florida-Annelids has already recorded this species from Florida under the synonym of *Arenicola antillensis*.

On account of the impossibility of drawing any sharp lines of demarcation between the forms from the Mediterranean, New Jersey, Florida and the West Indies, I venture to believe that they must be regarded as representing one species, having an unusually wide distribution.

From my study of the other species of the genus in connection with these forms from the New Jersey coast, I incline to the view put forward by Dr. von Marenzeller,² who, not including *Arenicola cristata* and its synonym, *Arenicola antillensis*, reduces all the species of the genus to two:—*Arenicola marina*, L. and *Arenicola ecaudata*, Johnston. The sixteen species of the genus which have been described may therefore be reduced to the following three:

ARENICOLA MARINA L. 6 prebranchial and 13 branchial segments, secondary branchiæ with 3 or 4 pairs of lateral tufts. Europe, Greenland, New England, Vancouver Island, Mediterranean, South Africa, Chili (Coquimbo).

ARENICOLA ECAUDATA, Johnston. 11–15 prebranchial and 13–40 branchial segments; secondary branchiæ, arborescent.

Europe, Mediterranean, Black Sea.

ARENICOLA CRISTATA, Stimpson. 6 prebranchial and 11 branchial segments; secondary branchiæ, plumose.

West Indies, Florida, South Carolina, New Jersey, Mediterranean.

The occurrence of *Arenicola marina* on the northwest coast of Alaska renders it probable that it will also be found upon the arctic shores of Europe and Asia. From northwest Alaska it has undoubtedly passed southward to Vancouver Island through Behring Strait, the western Gate of the North. Its distribution north and

¹ "Florida-Anneliden," Mem. Mus. Comp. Zool., Vol. xv, p. 173.

² Zoologische Jahrbücher, Bd. 3, pp. 12–15.

south of the Tropics is very anomalous, but future study of the intervening regions may throw some light upon the subject. The presence of the three species in the warm waters of the Mediterranean is interesting, and worthy of note.

Our present knowledge of the distribution of the species of the genus may be summarized as follows: *Arenicola marina*, occurs in the temperate seas of both hemispheres, and in the arctic seas of the north; *Arenicola ecaudata* is confined to the temperate seas of Europe, and *Arenicola cristata* is found in the temperate and tropical Atlantic, and in the Mediterranean.

References to the complete literature of the subject will be found in Quatrefage's "Histoire Naturelle des Annelés," and in the papers by Drs. von. Marenzeller and Horst, already referred to.